Integrating the Nano-Research and Education Communities

Notes from a Panel Presentation

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Creating and managing a collaborative environment between science researchers and educational researchers requires addressing the following three concerns from both groups:

I. *Concerns about Career Goals: Participation in the collaboration will interfere with my research.*

It is important to establish very early on how each individual expects to benefit from participation in the collaboration, e.g. published papers, additional graduate student resources, networking opportunities. Since the science educators wanted the benefit of doing research about teaching and learning science in the context of current science procedures and topics, the scientists' research was determined to be the necessary foundation of this context. Through this agreement, researchers in both science and education could continue their focus on their individual research interests.

II. *Concerns about Professional Roles: My research is too difficult (or abstract) for anyone else to understand or be interested in. My graduate students need to be doing their own research. From scientists: I don't know anything about working with teachers. From educational researchers: I don't know anything about working with science graduate students.*

There is a need for immediate recognition of the necessity for distributed expertise in the collaborative environment. It is NOT necessary for everyone to be an expert in everything. It IS necessary to know who is expert at what. Therefore, each participant in the collaboration must have an explicit, well-defined role. Of course, this does not preclude anyone from learning new things and expanding their expertise.

III. *Trying to fit previously adequate pegs into new holes: We've always done it THIS way.*

In order to provide opportunities to REALLY interact in a new, collaborative environment, it is necessary to create some new language together--to go through the process of creating common definitions and terms for important ideas. For example, in our collaboration between scientists and educational researchers, we try to avoid the phrase "research and education," since it tends to cause people to think of research and education as opposite ends of a spectrum, or as alternatives to one another.

We, instead, agreed to try to talk about research in science, research in education, applications of scientific research, and applications of educational research. We avoid the use of the words "workshop" and "outreach," because of both groups' previous experiences with those words as applying to specific types of activities that we are wanting to expand beyond. We also have tried to replace the words "teacher" and "classroom" and "students" with "instructor" and "learning environment" and "learners" so that we can communicate all at once with each other in our heterogeneous groups that consist of scientists, science graduate students, educational researchers, science education graduate students, and instructors in Grades 7 – 16.

Connection to personal goals, identification of well-defined roles, and encouragement to move beyond previous experiences have proven to be critical aspects of creating our integrated community of scientists and educational researchers.